

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
Before the Board of Patent Appeals and Interferences

In re Patent Application of

Atty Dkt. 839-1396

C# M#

SALEM et al.

TC/A.U.: 2834

Serial No. 10/649,784

Examiner: Y. Comas

Filed: August 28, 2003

Date: July 11, 2006

Title: REDUCTION OF CORE-END LOSSES OF DYNAMOELECTRIC MACHINES BY
USING LOWER CORE LOSS IRON SILICON PUNCHING

Mail Stop Appeal Brief - Patents

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

Sir:

☐ **Correspondence Address Indication Form Attached.**

☐ **NOTICE OF APPEAL**

Applicant hereby **appeals** to the Board of Patent Appeals and Interferences

from the last decision of the Examiner twice/finally rejecting
applicant's claim(s).

\$500.00 (1401)/\$250.00 (2401) \$

☒ An appeal **BRIEF** is attached in the pending appeal of the
above-identified application

\$500.00 (1402)/\$250.00 (2402) \$ 500.00

☐ Credit for fees paid in prior appeal without decision on merits

-\$ ()

☐ A reply brief is attached.

(no fee)

☐ Petition is hereby made to extend the current due date so as to cover the filing date of this
paper and attachment(s)

One Month Extension \$120.00 (1251)/\$60.00 (2251)

Two Month Extensions \$450.00 (1252)/\$225.00 (2252)

Three Month Extensions \$1020.00 (1253)/\$510.00 (2253)

Four Month Extensions \$1590.00 (1254)/\$795.00 (2254) \$

☐ "Small entity" statement attached.

Less month extension previously paid on

-\$ ()

TOTAL FEE ENCLOSED \$ 500.00

Any future submission requiring an extension of time is hereby stated to include a petition for such time extension.
The Commissioner is hereby authorized to charge any deficiency, or credit any overpayment, in the fee(s) filed, or
asserted to be filed, or which should have been filed herewith (or with any paper hereafter filed in this application by this
firm) to our **Account No. 14-1140**. A duplicate copy of this sheet is attached.

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NIXON & VANDERHYE P.C.
By Atty: Alan M. Kagen, Reg. No. 36,178

Signature: Alan M. Kagen

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SALEM et al.

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For: REDUCTION OF CORE-END LOSSES OF DYNAMOELECTRIC
MACHINES BY USING LOWER CORE LOSS IRON SILICON
PUNCHING

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APPEAL BRIEF

Sir:

Applicants hereby **appeal** to the Board of Patent Appeals and Interferences from
the last decision of the Examiner.

07/12/2006 JADD01 00000027 10649784

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(I) **REAL PARTY IN INTEREST**

The real party in interest is General Electric Company, a corporation of New York.

(II) RELATED APPEALS AND INTERFERENCES

The Appellants, the undersigned, and the assignee are not aware of any related appeals, interferences, or judicial proceedings (past or present), which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

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(III) STATUS OF CLAIMS

Claims 1-3 and 7 are present in this application. No claims have been substantively allowed.

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(IV) STATUS OF AMENDMENTS

No amendments have been filed since the date of the Final Rejection.

(V) SUMMARY OF CLAIMED SUBJECT MATTER

The invention relates to methods and structures for uprating or improving electric machines and, more particularly, to reducing core-end losses of dynamoelectric machines using lower core loss iron silicon. It is desirable to reduce losses and heating, especially in the generator or motor core-ends without sacrificing reliability, efficiency, and performance of the machine. The invention increases the potential to uprate electric machines by partially re-stacking the core-end laminations.

With reference to FIG. 2, a dynamoelectric machine 10 includes conventional components as shown such as a stator 12 and a rotor 14. The stator 12 is composed of a stator flux shield 16, a stator flange 18, and stacked lamination packages 20 secured via keybars 22 and outside space blocks 24. The armature end winding 26 is also shown. The rotor 14 includes a suitable centering ring 28 and a retaining ring 30. See paragraph [0009].

The stator core end 32 may suffer from electromagnetic losses and heating as discussed above. The electromagnetic losses and the consequent heating in generator or motor core-ends can be reduced, however, by using lower core loss iron silicon punching 34 at the core-end 32. Lower core loss iron silicon punching could be used in the last one or more lamination packages of the stator core. Higher grade iron silicon grain-oriented punching has with-grain core losses lower than the conventional M-6 grain-oriented iron silicon punching. The mechanical properties of the lower core loss iron silicon punching, such as M-4 (higher grade iron silicon punching), are similar to the conventional M-6 grain-oriented iron silicon punching. Lower loss iron silicon punching lamination

thickness could be similar to the conventional M-6 iron silicon punching; therefore, the stacking factor will be the same for both materials. The lower loss iron silicon core end punching material is particularly suited for generator uprate, by a partial re-stacking of the core-end to reduce the core-end loss and temperatures. See paragraph [0010].

(VI) GROUND OF REJECTION TO BE REVIEWED ON APPEAL

Whether claims 1-3 and 7 are unpatentable under 35 U.S.C. §103(a) over U.S. Patent No. 5,172,020 to Hibino et al. in view of U.S. Patent No. 6,191,510 to Landin.

(VII) ARGUMENT

Claims 1-3 and 7 are not unpatentable under 35 U.S.C.  103(a) over Hibino et al. in view of Landin.

Claim 1 defines a method of uprating electric machines including a step of removing at least a last one of the stacked lamination packages at each end of the stator core, and a step of re-stacking the removed lamination packages with a lower core loss material. The Office Action contends that “Hibino discloses the claimed invention . . .” while acknowledging that Hibino lacks each step of the method defined in claim 1. Appellants respectfully submit that since the Hibino patent lacks each step of the method defined in claim 1, Hibino is in fact unrelated to the subject application, and the Office Action fails to set forth a *prima facie* case of obviousness. In simpler terms, assuming a claimed method defines step A and step B, by the logic in the Office Action, the primary reference lacks both step A and step B, but contends that the primary reference “discloses the claimed invention” except for steps A and B. The Office Action provides that such steps are defined in a secondary patent. The Office Action concludes that it would have been obvious to modify the primary patent to include steps A and B in view of the secondary patent. Appellants respectfully submit, however, that this logic does not follow and is insufficient to support an obviousness conclusion.

In addition, it is settled that “the mere fact that the prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification. *In re Gordon*, 733 F.2d 900 (Fed. Cir. 1984). Nowhere does the Hibino patent even remotely suggest the desirability of removing at least a last one of stacked lamination packages at each end of a stator core, and re-stacking the

removed lamination packages with a lower core loss material. Hibino in fact describes a stator core having end portions with low magnetostrictive core portions 12, 13, each formed by laminating a plurality of high silicon steel sheets each containing 6.5% silicon. The middle portion of the stator core 3 between the end portions 12, 13 is formed into a conventional laminated core portion 14. Using the logic proposed in the Office Action, without conceding this characterization of the Hibino structure, the Hibino patent thus would not in any manner suggest the desirability of removing and re-stacking lamination packages as such would be redundant to the disclosed structure. Without a suggestion to make the modification asserted in the Office Action, Appellants respectfully submit that the rejection is misplaced.

The Landin patent describes using a damped stator and rotor and other core structures for reducing vibration by incorporating materials that can be sprayed or silk-screened or coated or cast onto magnetic layers in a continuous or discontinuous manner. The Office Action references column 22, lines 45-60. In this example, Landin describes restructuring a comparative example stator in order to include a damping material layer between each of the core ferrous layers. The damped stator assembly was tested in the same way as the undamped stator of Comparative Example 1, and the frequency response function versus frequency for the internally damped stator was determined (see Fig. 10). Despite that the Hibino patent teaches away from the modification proposed in the Office Action, the Landin patent does not correct its deficiencies and similarly does not suggest the method of the claimed invention. That is, Appellants respectfully submit that alternating ferrous layers with a vibration damping material in a stator core as in the

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Landin patent does not in any manner suggest that the structure of the Hibino patent could be modified to meet the method steps of removing at least a last one of the stacked lamination packages at each end of the stator core, and re-stacking the removed lamination packages with a lower core loss material as defined in claim 1 of the present application. For this reason also, Appellants respectfully submit that the rejection is misplaced.

With regard to dependent claims 2, 3 and 7, Appellants submit that these claims are allowable at least by virtue of their dependency on an allowable independent claim.

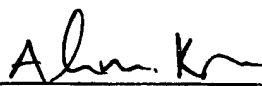
Reversal of the rejection is respectfully requested.

CONCLUSION

In conclusion it is believed that the application is in clear condition for allowance; therefore, early reversal of the Final Rejection and passage of the subject application to issue are earnestly solicited.

Respectfully submitted,

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(VIII) CLAIMS APPENDIX

1. A method of uprating electric machines including a stator core with stacked lamination packages, the method comprising:

removing at least a last one of the stacked lamination packages at each end of the stator core; and

re-stacking the removed lamination packages with a lower core loss material.
2. A method according to claim 1, wherein the stacked lamination packages comprise grain-oriented iron silicon punching (M-6) having a with-grain core loss of about 0.573 at 1.5 T (W/lb), and wherein the re-stacking step comprises re-stacking the removed lamination packages with a higher grade grain-oriented iron silicon punching having a with-grain core loss less than M-6.
3. A method according to claim 1, wherein the re-stacking step comprises re-stacking the removed lamination packages with M-4 iron silicon punching.
7. An uprated electric machine assembled according to the method of claim 1.

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(IX) EVIDENCE APPENDIX

NOT APPLICABLE

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(X) **RELATED PROCEEDINGS APPENDIX**

NOT APPLICABLE